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National Economic Cost of Equine Lameness, Colic, and Equine Protozoal Myeloencephalitis (EPM) in the United States

National estimates of the economic cost of animal diseases can be helpful in prioritizing research, management, and control efforts. There are few recent estimates of the economic impact of equine health conditions in the United States, particularly at the national level. Most cost estimates focus primarily on aiding decision-making for alternative treatment strategies.

To evaluate the 1998 economic cost of lameness, colic, and equine protozoal myeloencephalitis (EPM) to the U.S. equine industry, epidemiologic estimates from Equine '98, a study conducted by the USDA's National Animal Health Monitoring System (NAHMS), were combined with population and value estimates from both the USDA's National Agricultural Statistics Service (NASS) and the American Horse Council (AHC).

Questions in the NAHMS survey were structured so that three components of costs associated with disease could be estimated: (1) death loss; (2) veterinary services, drugs, and additional care; and (3) lost use of affected horses.

Analysis of data from the NAHMS Equine '98 survey yielded estimates of the percent of the U.S. horse population affected annually with lameness, colic, and EPM (Table 1). For lameness and EPM, these estimates, as well as the cost data described below, were obtained by asking questions related to the last occurrences of lameness and EPM at the operations being surveyed.

Asking participants for detailed information about their last cases of lameness and EPM, rather than asking them to recall multiple events, was expected to yield higher quality data. For colic, estimates were based on data recorded on every colic case observed on the operations surveyed over the course of a one-year period.

The value of death loss was calculated as the affected population of horses in the U.S. greater than six months of age multiplied by the weighted average number of events that ended in death multiplied by the average sales value of a horse in the U.S. during 1998. Use of the average sales value assumes that a particular health condition or disease event is distributed proportionally across the equine population. If higher valued equids experience the health condition disproportionately, the estimate of the cost of death loss would form a conservative estimate on costs.

Expenses for veterinary services, drugs, and additional care were calculated as the affected population of horses in the U.S. greater than six months old multiplied by the weighted average costs of veterinary services, drugs, and additional care reported in the Equine '98 survey.

Table 1. Comparison of Epidemiologic and Economic Data Inputs, by Type of Disease Condition

	Lameness	Colic	EPM
Annual Incidence	8.5-13.7 events/100 horses	4.2 events/100 horses	0.14 events/100 horses
Vet Services et. al.	$432/event	$160/event	$1,438/event
Case Fatality Rate	2.5 percent	11.0 percent	4.7 percent
Lost Use per Event	110 days	2.4 days	244 days

Beyond the direct costs of disease, there are costs associated with losing the use of affected horses during treatment and recuperation. It is important to estimate these costs in terms of revenue lost by owners during these periods.

In Equine '98, operators estimated the number of "days of lost use" for horses that survived a condition or disease event. In placing a value on these days, a proxy was calculated for the revenue forgone by horse owners. The total number of days of lost use in the U.S. was multiplied by two components reflecting lost revenue: (1) the average sales value of a horse divided by the number of days of life expectancy discounted to the present; (2) the weighted average cost of maintaining the horse. Average life expectancy of a horse was assumed to be 20 years. Again, using the average sales value would cause the estimate of lost use to be a conservative estimate on costs if the health condition is experienced disproportionately across the equine population in terms of equid value.

The three cost components were summed to obtain estimates of the magnitude of the economic impact to the U.S. due to the occurrence of lameness, colic, and EPM in the U.S. horse population (Figure 1).

For lameness, the total estimate ranges from $678 million to $1 billion for 1998 due to a range of estimates for the incidence of lameness. For the lower incidence estimate, the largest component of these costs, 66 percent, is attributed to lost use of horses. Twenty-nine percent of lameness costs arise from veterinary services, drugs, and additional care expenses, while only 5 percent of costs result from deaths due to lameness.

The three disease conditions chosen for study in the NAHMS Equine '98 survey were based on input from industry, the veterinary community, government, and the academic community. These three conditions are of interest from an economic perspective because they provide estimates of the magnitude of common health costs in the U.S. horse industry, and because they provide an interesting comparison of the relative importance of the different components of the costs.

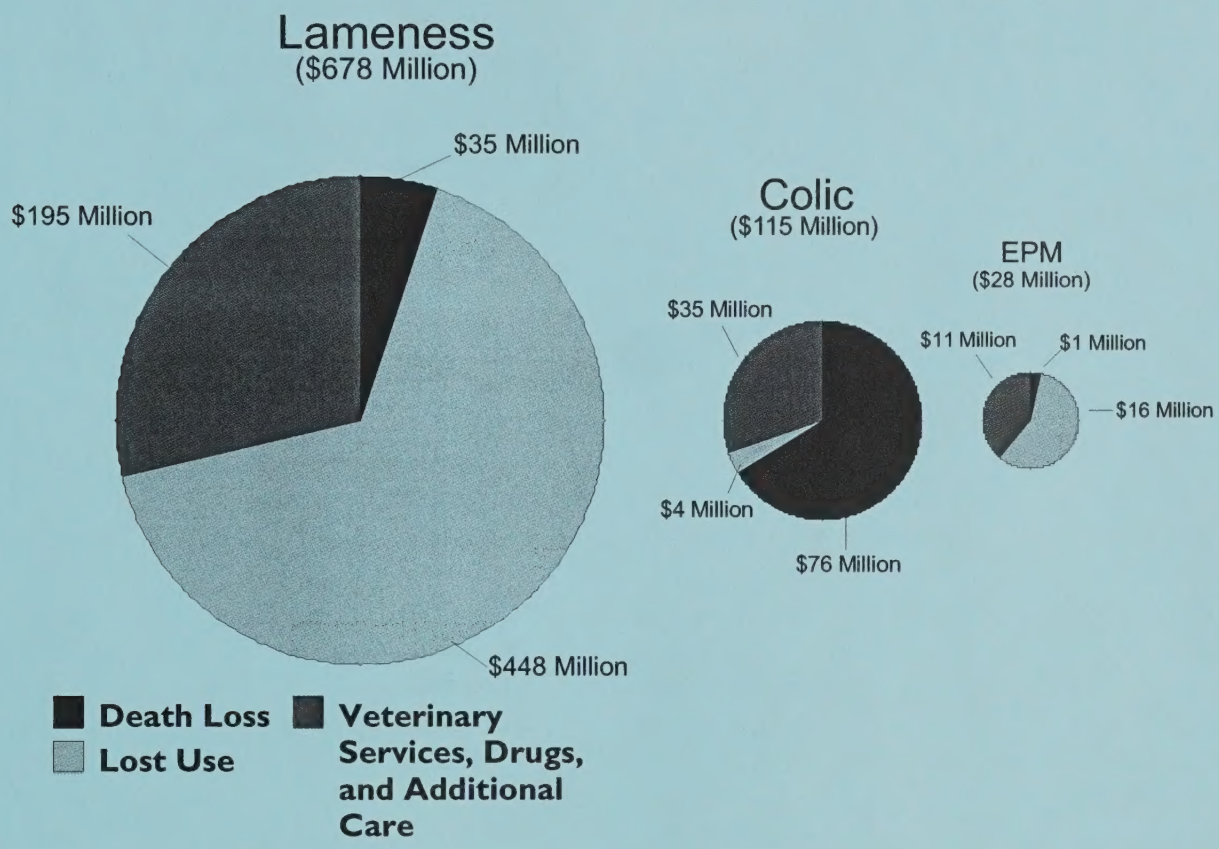
A much higher incidence of equine lameness, combined with moderate levels of death, number of days of lost use, and veterinary services, drugs and additional care expenses ranked lameness as the most costly of the three disease conditions.

Colic was a distant second in terms of costs associated with the three disease conditions studied, because of death-loss percentages, moderate incidence, a low number of days of lost use, and low veterinary services, drugs, and additional care expenses.

EPM ranks third because of its very low incidence, which offsets moderate levels of death loss, high levels of days of lost use, and high levels of veterinary services, drugs, and additional care expenses.

Figure 1.

1998 U.S. Cost Estimates by Components



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